

```
CMake Generate step failed. Build files cannot be regenerated correctly.
● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ cmake ..
-- Configuring done (0.0s)
-- Generating done (0.0s)
-- Build files have been written to: /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build
● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ cmake --build .
[ 6%] Built target fork_demo
[ 13%] Built target exec_demo
[ 20%] Built target pipe_demo
[ 26%] Built target pipeline_demo
[ 33%] Built target zombie_demo
[ 36%] Building C object CMakeFiles/ch1_single_fork.dir/challenges/ch1_single_fork.c.o
[ 40%] Linking C executable ch1_single_fork
[ 40%] Built target ch1_single_fork
[ 43%] Building C object CMakeFiles/ch2_multi_child.dir/challenges/ch2_multi_child.c.o
[ 46%] Linking C executable ch2_multi_child
[ 46%] Built target ch2_multi_child
[ 50%] Building C object CMakeFiles/ch3_exec_ls.dir/challenges/ch3_exec_ls.c.o
[ 53%] Linking C executable ch3_exec_ls
[ 53%] Built target ch3_exec_ls
[ 56%] Building C object CMakeFiles/ch4_exec_worker.dir/challenges/ch4_exec_worker.c.o
[ 60%] Linking C executable ch4_exec_worker
[ 60%] Built target ch4_exec_worker
[ 63%] Building C object CMakeFiles/ch5_exec_examples.dir/challenges/ch5_exec_examples.c.o
[ 66%] Linking C executable ch5_exec_examples
[ 66%] Built target ch5_exec_examples
[ 70%] Building C object CMakeFiles/ch6_pipe_sum.dir/challenges/ch6_pipe_sum.c.o
[ 73%] Linking C executable ch6_pipe_sum
[ 73%] Built target ch6_pipe_sum
[ 76%] Building C object CMakeFiles/ch7_pipeline.dir/challenges/ch7_pipeline.c.o
[ 80%] Linking C executable ch7_pipeline
[ 80%] Built target ch7_pipeline
[ 83%] Building C object CMakeFiles/ch8_wait_nonblock.dir/challenges/ch8_wait_nonblock.c.o
[ 86%] Linking C executable ch8_wait_nonblock
[ 86%] Built target ch8_wait_nonblock
[ 90%] Building C object CMakeFiles/ch9_zombie.dir/challenges/ch9_zombie.c.o
[ 93%] Linking C executable ch9_zombie
[ 93%] Built target ch9_zombie
[ 96%] Building C object CMakeFiles/ch10_pool.dir/challenges/ch10_pool.c.o
[100%] Linking C executable ch10_pool
[100%] Built target ch10_pool
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $
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● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch10_pool 3 hello.txt hey.txt bye.txt
Processing 3 files with concurrency limit 3
Started worker PID 166513 for file: hello.txt
Worker PID 166513 processing file: hello.txt
Started worker PID 166514 for file: hey.txt
Worker PID 166514 processing file: hey.txt
Started worker PID 166515 for file: bye.txt
Worker PID 166515 processing file: bye.txt
Worker PID 166513 finished processing: hello.txt
Worker PID 166514 finished processing: hey.txt
Worker PID 166515 finished processing: bye.txt
Worker PID 166513 finished
Worker PID 166514 finished
Worker PID 166515 finished
All files processed
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ █
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```
● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./exec_demo
total 116
-rw-rw-rw-  1 codespace codespace 12577 Sep  7 17:07 CMakeCache.txt
drwxrwxrwx+ 10 codespace codespace  4096 Sep  7 18:05 CMakeFiles
-rw-rw-rw-  1 codespace codespace 10778 Sep  7 17:07 Makefile
-rw-rw-rw-  1 codespace codespace  1666 Sep  7 17:07 cmake_install.cmake
-rwxrwxrwx  1 codespace codespace 16224 Sep  7 18:05 exec_demo
-rwxrwxrwx  1 codespace codespace 16272 Sep  7 18:05 fork_demo
-rwxrwxrwx  1 codespace codespace 16352 Sep  7 18:05 pipe_demo
-rwxrwxrwx  1 codespace codespace 16312 Sep  7 18:05 pipeline_demo
-rwxrwxrwx  1 codespace codespace 16264 Sep  7 18:05 zombie_demo
Parent: child finished exec.
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $
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```
@JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch1
ch10_pool      ch1_single_fork
● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch1_single_fork
Hello from child (PID=158986, PPID=158985)
child 158986 exited with status 7
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```
● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch2_multi_child 5
Child 0 (PID=159328)
Child 1 (PID=159329)
Child PID 159328 finished with status 1
Child 2 (PID=159330)
Child 4 (PID=159332)
Child 3 (PID=159331)
Child PID 159329 finished with status 2
Child PID 159330 finished with status 3
Child PID 159331 finished with status 4
Child PID 159332 finished with status 5
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ █
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```
● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch3_exec_ls
total 316
drwxrwxrwx+  3 codespace codespace 4096 Sep  7 21:04 .
drwxrwxrwx+  6 codespace codespace 4096 Sep  7 17:06 ..
-rw-rw-rw-   1 codespace codespace 12577 Sep  7 17:07 CMakeCache.txt
drwxrwxrwx+ 19 codespace codespace 4096 Sep  7 21:04 CMakeFiles
-rw-rw-rw-   1 codespace codespace 26646 Sep  7 21:03 Makefile
-rwxrwxrwx   1 codespace codespace 16456 Sep  7 21:04 ch10_pool
-rwxrwxrwx   1 codespace codespace 16320 Sep  7 21:04 ch1_single_fork
-rwxrwxrwx   1 codespace codespace 16344 Sep  7 21:04 ch2_multi_child
-rwxrwxrwx   1 codespace codespace 16224 Sep  7 21:04 ch3_exec_ls
-rwxrwxrwx   1 codespace codespace 16232 Sep  7 21:04 ch4_exec_worker
-rwxrwxrwx   1 codespace codespace 16232 Sep  7 21:04 ch5_exec_examples
-rwxrwxrwx   1 codespace codespace 16352 Sep  7 21:04 ch6_pipe_sum
-rwxrwxrwx   1 codespace codespace 16400 Sep  7 21:04 ch7_pipeline
-rwxrwxrwx   1 codespace codespace 16304 Sep  7 21:04 ch8_wait_nonblock
-rwxrwxrwx   1 codespace codespace 16312 Sep  7 21:04 ch9_zombie
-rw-rw-rw-   1 codespace codespace 1666 Sep  7 17:07 cmake_install.cmake
-rwxrwxrwx   1 codespace codespace 16256 Sep  7 19:30 exec_demo
-rwxrwxrwx   1 codespace codespace 16360 Sep  7 19:30 fork_demo
-rwxrwxrwx   1 codespace codespace 16488 Sep  7 19:32 pipe_demo
-rwxrwxrwx   1 codespace codespace 16464 Sep  7 19:51 pipeline_demo
-rwxrwxrwx   1 codespace codespace 16304 Sep  7 20:15 zombie_demo
Child process finished, parent continuing...
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● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch4_exec_worker
worker: argv[0]=worker argv[1]=arg1 argv[2]=arg2 and environment variable MYVAR=hello
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● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ps -el | grep Z
F S  UID      PID      PPID  C PRI  NI ADDR SZ WCHAN  TTY          TIME CMD
1 Z  1000    118873    118872  0  80   0  -    0 -      pts/1    00:00:00 zombie_demo
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./zombie_d...

bash build



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● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch5_exec_examples
one two
one two
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $
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PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) \$./fork_demo

[parent] created child PID = 123657

[child] PID = 123657, PPID = 123656

[child] exiting with code 42

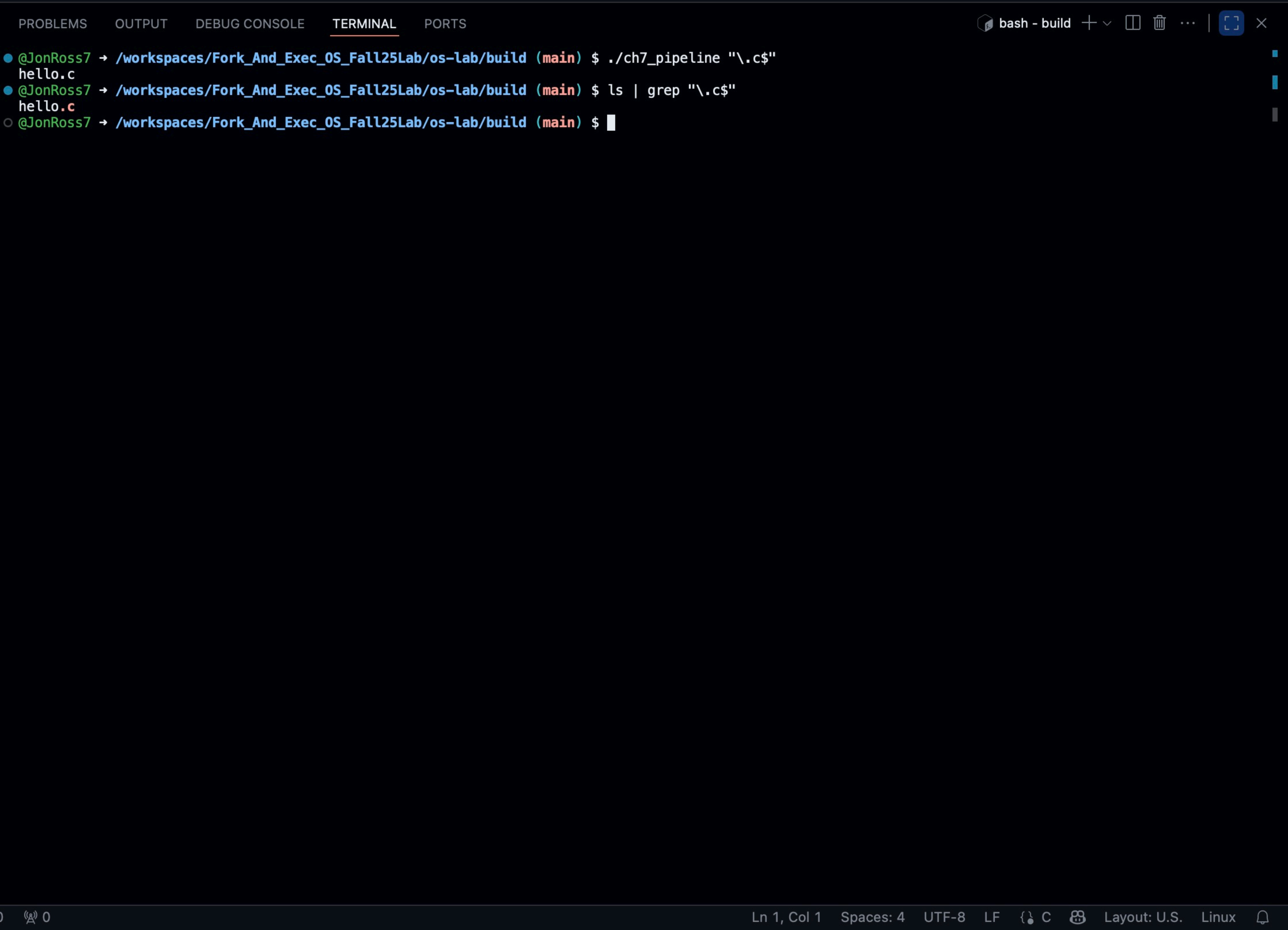
[parent] child 123657 exited with status 42

○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) \$

bash build

bash build


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● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch6_pipe_sum
Sum = 55.
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ █
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```
● @JonRoss7 → /workspaces/Fork_And_Exec_0S_Fall25Lab/os-lab/build (main) $ ./ch7_pipeline "\.c$"  
hello.c  
● @JonRoss7 → /workspaces/Fork_And_Exec_0S_Fall25Lab/os-lab/build (main) $ ls | grep "\.c$"  
hello.c  
○ @JonRoss7 → /workspaces/Fork_And_Exec_0S_Fall25Lab/os-lab/build (main) $ █
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```
● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./pipe_demo
[child] about to exec wc -l
5
[parent] child finished wc
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ █
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bash build


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● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./ch8_wait_nonblock
Child 1 starting, will sleep 1 seconds
Child 2 starting, will sleep 2 seconds
Parent polling... no children finished yet
Child 3 starting, will sleep 3 seconds
Parent polling... no children finished yet
Child 1 finished
Parent detected child 164912 finished
Parent polling... no children finished yet
Parent polling... no children finished yet
Child 2 finished
Parent detected child 164913 finished
Parent polling... no children finished yet
Parent polling... no children finished yet
Child 3 finished
Parent detected child 164914 finished
All children have finished
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ █
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● @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ ./pipeline_demo
[parent] forked child1 with PID=124974 and child2 with PID=124975
[child2] PID=124975 about to exec grep .c
CMakeCache.txt
cmake_install.cmake
exec_demo
[parent] finished waiting for both children
○ @JonRoss7 → /workspaces/Fork_And_Exec_OS_Fall25Lab/os-lab/build (main) $ █
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 bash build

 bash build